

Earth Materials

Students investigate observable characteristics of solid materials from the earth, rocks and minerals. They will take rocks apart to examine their mineral components and further explore the properties of minerals.

Unit Length: 8-10 weeks

Resources: FOSS Earth Materials Module
FOSS Earth Materials Science Stories

Essential Questions: How can rocks be broken down into their mineral components?
How can the properties of minerals be used to sort and classify earth materials?

NJCCCS:

Science Content (Declarative Conceptual Knowledge)	NJCCCS
Students Will Know and Understand:	
Rocks can be separated into their components	5.2 A., 5.4 C
Rocks exhibit a variety of properties, including shape, size, color and texture	5.2 A., 5.4 C
Water, settling, and evaporation can separate rocks into their components	5.2 A., 5.4 C
Crystals form from evaporation of a saltwater mixture	5.2 A., 5.4 C
Rocks are composed of earth materials called minerals that cannot be physically broken apart any further.	5.2 A., 5.4 C
The property of hardness can be used to sort and classify minerals	5.2 A., 5.4 C
Minerals have different properties	5.2 A., 5.4 C
Rocks can be tested to identify their mineral components	5.2 A., 5.4 C
Properties of minerals can be used to find out which minerals make up a rock	5.2 A., 5.4 C

Thinking Processes (Procedural Knowledge)	NJCCCS
NJCCCS 5.1 A-D	
Students Will Be Able To:	
Record and discuss observations about rock and minerals	5.2 A., 5.4 C
Compare observations	5.2 A., 5.4 C
Take apart a mixture by separating the ingredients	5.2 A., 5.4 C
Observe and describe how rock materials separate and settle in water	5.2 A., 5.4 C
Observe the results of evaporation	5.2 A., 5.4 C
Observe the properties of minerals	5.2 A., 5.4 C
Record properties of minerals	5.2 A., 5.4 C
Organize observations	5.2 A., 5.4 C
Sort and Classify minerals based on hardness	5.2 A., 5.4 C

Assessment: Teacher observation, running records of skill attainment, hands-on activities, unit assessment

Forms of Energy: Heat, Light, & Sound

Students study familiar forms of energy; heat, light, and sound. Through hands-on experiences they will understand how each form travels, is transferred, and changed into other energy forms.

Unit Length: 8-10 weeks

Resources: DSM Sound Module
FOSS Physics of Sound Science Stories

Essential Questions: In what familiar forms does energy present itself?
How do heat, light, and sound travel?
How does the medium in which energy passes through affect the characteristics of heat, light, and sound?

NJCCCS:

Science Content (Declarative Conceptual Knowledge)	NJCCCS
Students Will Know and Understand:	
Heat, light, and sound are forms of energy	5.2 C
Energy can be conserved	5.4 G
Energy changes forms	5.2 C
Heat is how fast particles are moving in a substance	5.2 C
Temperature is the measurement of heat	5.2 C
Heat travels through conduction, convection, and/or radiation	5.2 C
Light travels in straight lines	5.2 C
Light can be reflected (bounced back) or refracted (bent)	5.2 C
Light can be refracted with a prism, and create the colors of the rainbow	5.2 C
The degree that light can pass through an object can be described as transparent, translucent, or opaque	5.2 C
Light can create shadows	5.2 C
Land (soil), air, and water absorb the sun's light energy at different rates	5.2 C, 5.4 E
Sound is caused by vibrations	5.2 C
Pitch is how high or low a sound is	5.2 C
Differences in pitch are caused by differences in the rate at which objects vibrate	5.2 C
Several variables affect pitch, including size (length), tension, and thickness of the source material	5.2 C
Sound travels through solids, water and air (mediums)	5.2 C
The medium that sound passes through affects its volume and the distance at which it can be heard	5.2 C

Thinking Processes (Procedural Knowledge) NJCCCS 5.1 A-D	NJCCCS
Students Will Be Able To:	
Observe and compare how energy forms travel through solids, water, and air	5.2 C
Compare heat energy transfer for different materials and colors	5.2 C
Measure temperatures	5.2 C
Read thermometers	5.2 C
Observe and record beams of light	5.2 C
Compare how light passes through different mediums	5.2 C
Measure how light affects shadow shape and size	5.2 C
Refract light using a prism	5.2C
Measure how soil, air, and water will absorb the sun's light energy	5.2 C, 5.4 E
Observe, discriminate and compare sounds made by objects when dropped	5.2 C
Communicate with others using a code	5.2 C
Observe that sound originates from a vibrating source	5.2 C
Compare high-, low-, and medium- pitched sounds	5.2 C
Relate the pitch of a sound to the physical properties of the sound source	5.2 C
Research ways that energy can be conserved	5.4 G

Assessment: Teacher observation, running records of skill attainment, hands-on activities, unit assessment

Solar System

In this unit, students explore models and research content information to gain perspective on the physical relationships between objects in our Solar System.

Unit Length: 4-5 weeks

Resources: Delta Science Module- *Solar System*
Delta Science Readers- *Solar System*
Discovery Works Grade 3 Textbook

Essential Questions: What objects make up the solar system?
How do bodies move within the solar system?
What causes day, night, and seasonal changes?
How does the apparent size of the body relate to distance?

NJCCCS:

Science Content (Declarative Conceptual Knowledge)	NJCCCS
Students Will Know and Understand:	
Distance of sky objects from us affects their apparent sizes.	5.4 A
The Solar System is filled with planets, moons, stars, asteroids and comets.	5.4 A
Gravity is a force that influences planetary movement.	5.4 A
Planets orbit the sun in ellipses, not circles	5.4 A
The Earth, like all planets and stars, is round like a sphere.	5.4 A
The difference between rotation and revolution.	5.4 A
The Earth spins on an axis.	5.4 A
The Earth's rotation creates changes in day and night.	5.4 A
The Earth's revolution around the sun creates seasonal changes.	5.4 A
Constellations are groupings of stars.	5.4 A
Different cultures have creates fictional stories about constellations.	5.4 A

Thinking Processes (Procedural Knowledge)	NJCCCS
NJCCCS 5.1 A-D	
Students Will Be Able To:	
Manipulate model satellite system	5.4 A
Relate apparent distance to real distance.	5.4 A
Compare relative size of planets.	5.4 A
Distinguish and Demonstrate rotation and revolution using models.	5.4 A
Simulate changes in day and night and seasons on Earth.	5.4 A
Construct constellation models and identify several constellations.	5.4 A

Assessment: Teacher observation, running records of skill attainment, hands-on activities, unit assessment

Digestive System

Students explore the structure and function of the digestive system and learn how to maintain a healthy body by eating balanced nutritional meals. Students will learn how to classify foods based upon nutritional value and will apply this knowledge by interpreting food labels and planning a balanced nutritional menu. They will also investigate diseases related to unhealthy eating habits.

Unit Length: 2-3 weeks

Resources: *Discovery Works* Grade 3 Textbook

Essential Questions: How is food broken down and used by the body?
Which foods are needed for healthy body growth and development?

NJCCCS:

Science Content (Declarative Conceptual Knowledge)	NJCCCS	
Students Will Know and Understand:	Science	Health
Each body part involved in the digestive system has a specific function.	5.3 A	
The digestive system breaks down food and makes it usable for the body.	5.3 A	
Foods are categorized by their nutritional content.		2.1 B
Nutritious foods from a variety of categories are needed for healthy body growth and development.		2.1 B
Healthy eating provides energy, helps maintain a healthy weight, and lowers the risk of disease.		2.1 B

Thinking Processes (Procedural Knowledge)	NJCCCS	
NJCCCS 5.1 A-D	Science	Health
Students Will Be Able To:		
Communicate the function and purpose of the digestive system.	5.3 A	
Categorize foods based upon their nutritional content.		2.1 B
Interpret food labels.		2.1 B
Track their daily food consumption.		2.1. B
Plan a balanced nutritious menu.		2.1. B
Investigate diseases related to unhealthy eating.		2.1. B

Assessment: Teacher observation, running records of skill attainment, hands-on activities, unit assessment

Plant and Animal Life Cycles

Students observe, compare, categorize, and care for organisms and in doing so they learn to identify properties of plants and animals, to sort and group organisms on the basis of observable properties, and investigate the various phases of their life cycles.

Unit Length: 6-8 weeks

Resources: *Delta Science Modules (DSM) Plant and Animal Life Cycles*
Delta Science Readers Plant and Animal Life Cycles
Discovery Works Grade 3 Textbook

Essential Questions: What are the basic needs for survival for living organisms?
How do plants and animals change during their life cycles?
How does an organism's structure help it adapt to its environment?

NJCCCS:

Science Content (Declarative Conceptual Knowledge)	NJCCCS
Students Will Know and Understand:	
All organisms have requirements for life and have structures to help them meet their basic needs.	5.3 A-E
Seeds are found in the plant part called a fruit.	5.3 A-E
Different kinds of fruits have different kinds and numbers of seeds.	5.3 A-E
Seeds have a variety of properties.	5.3 A-E
Seeds undergo changes in the presence of water.	5.3 A-E
A seed is a living thing.	5.3 A-E
A seed contains the embryo plant and stores food and water.	5.3 A-E
Germination is the onset of a seed's growth.	5.3 A-E
Plants need water, light, and nutrients to grow.	5.3 A-E
The life cycle of a plant is the process of a seed growing into a mature plant, which in turn produces seeds.	5.3 A-E
The fruit of the plant develops from the flower.	5.3 A-E
Animals have structures that help them survive in their habitat.	5.3 A-E
Habitat is where an organism lives.	5.3 A-E
Animals vary in the stages of their life cycles. (i.e. egg, larvae, nymph, pupa, adult)	5.3 A-E
Metamorphosis is a complete change in structure as an organism changes phases of its life cycle.	5.3 A-E
The structures found on different kinds of organisms show some similarities and some differences.	5.3 A-E

Thinking Processes (Procedural Knowledge) NJCCCS 5.1 A-D	NJCCCS
Students Will Be Able To:	
Describe and sort seeds according in terms of properties.	5.3 A-E
Plant seeds and observe the phases of the plant life cycle.	5.3 A-E
Pollinate flowers.	5.3 A-E
Collect seeds from mature plant.	5.3 A-E
Observe the life cycles of animals such as butterflies and fruit flies	5.3 A-E
Compare and record observations about structures of an organism.	5.3 A-E
Observe and compare behaviors of an organism.	5.3 A-E

Assessment: Teacher observation, running records of skill attainment, hands-on activities, unit assessment

Food Chains and Webs

Students observe, compare, and care for organisms and in doing so they will witness ways organisms interact with in an ecosystem. They will study the feeding relationships and simulate how energy flows through a food web.

Unit Length: 6-8 weeks

Resources: *Delta Science Modules(DSM)* Food Chains and Webs
Delta Science Readers Food Chains and Webs
Discovery Works Grade 3 Textbook

Essential Questions: How do living things interact in an ecosystem?
 How is energy transferred to organisms in an ecosystem?
 What role do plants and animals play in a food web?
 How do ecosystems change?

NJCCCS:

Science Content (Declarative Conceptual Knowledge)	NJCCCS
Students Will Know and Understand:	
Living things interact with each other and the environment in an ecosystem.	5.3 A-E
Many species live in an ecosystem.	5.3 A-E
A group of the same species is called a population.	5.3 A-E
All of the populations in an ecosystem are called a community.	5.3 A-E
Living things interact with each other in many ways, such as predator/prey, and parasite/host,	5.3 A-E
Organisms adapt to their environments through adaptations such camouflaging, mimicry, unique body structures.	5.3 A-E
Energy moves through an ecosystem through feeding relationships. (producers, consumers, and decomposers)	5.3 A-E
The energy transfer can be shown through a food chain or web.	5.3 A-E
An energy pyramid shows the amount of energy that moves through a food web.	5.3 A-E
When too many of species die, they become endangered.	5.3 A-E
If all of the members of a species die out, that species is extinct.	5.3 A-E

Thinking Processes (Procedural Knowledge) NJCCCS 5.1 A-D	NJCCCS
Students Will Be Able To:	
Examine non living parts of a habitat/ecosystem.	5.3 A-E
Conduct an experiment to determine the effect of sunlight on plant growth.	5.3 A-E
Examine structures of organisms (crickets, earthworms, anoles, butterflies, frogs).	5.3 A-E
Observe how organisms respond to different food choices.	5.3 A-E
Diagram food webs on paper.	5.3 A-E
Simulate feeding relationships between crickets, anoles, and owls.	5.3 A-E
Compare simulated food chain relationships with real ones.	5.3 A-E
Examine a food pyramid.	5.3 A-E
Observe animals in a habitat.	5.3 A-E
Care for animals in a habitat.	5.3 A-E

Assessment: Teacher observation, running records of skill attainment, hands-on activities, unit assessment